

fluctuating supplies of moisture and of humus, inventing new absorbing and fixing organs, and contriving fresh devices for resisting threatened death from thirst or starvation, until at length their perilous career was crowned with success and they formed aerial meadows, gardens, shrubberies, and even forests. Schimper showed that the evolution of epiphytes was still reflected in the forest, where the simplest epiphytes lurk low down in moist shaded crevices of the tree trunks, and the more elaborate ones are ranged successively upwards until, even before the tree-tops are reached, perfection is practically attained. Further, he taught how, having emerged into the full blaze of the tropical sun, some epiphytes had sprung across to the savannahs, where they colonised the isolated trees or clothed the nakedness of the bare rocks. And still later he carried the history one step further and revealed some epiphytes flying up to the mountain-tops and others leaping down to the ground near the sea.

The next oecological paper, that on myrmecophilous plants (1888), furnished relatively little that was new, but by the application of a strict method of research it definitely proved views that had been promulgated by that sagacious naturalist, Belt.

The very brief communication on the means of protection against transpiration (1890) was possibly the most suggestive ever issued by Schimper. In it he explained that terrestrial plants living on or near the sea shore, even in saline swamps, or growing inland in the vicinity of salt springs, require to protect themselves against excessive transpiration owing to the difficulty in obtaining a sufficient supply of water with or without salt. Further, he pointed out that Alpine plants in the tropics, at spots where there is no snow, reveal the same xerophilous character as in temperate regions, and it is against desiccation due to exalted transpiration, and not against cold as such, that Alpine plants have to battle. Finally he directed attention to the fact that in temperate regions deciduous trees shed their leaves because they cannot absorb water sufficiently rapidly from the cold soil; whereas evergreen trees can retain their foliage because of the xerophytic structure of the latter. (Though he was not aware of the fact, Schimper was not the actual discoverer of this truth, for I find that Hales appreciated it.) These considerations led to the solution of several geographical problems. They explained how, in temperate and tropical regions alike, Alpine plants may reappear on the sea shore; how, in the tropics, epiphytes reappear as terrestrial plants on Alpine heights, on the sea shore, or near salt-springs. These plants can interchange positions because they are all adapted to resist one danger—excessive transpiration.

In his last oecological paper on a special subject—the Indo-Malayan littoral vegetation (1891)—the principles enunciated in the preceding work were proved and expanded, and other relations between littoral plants and their animate and inanimate surroundings were dealt with. It is impossible to do justice to this paper in a brief note, but it may be mentioned that the important distinction between salt-loving and salt-hating plants was shown to refer, not merely to plants growing on the shores or inland respectively, but to whole orders or cohorts. Littoral plants, then, are salt-enduring representatives that have been driven by competition to the fringe of vegetation, where they have evolved new features in their vegetative and reproductive parts in order that they may exist and spread abroad from shore to shore.

Schimper's last book, a general work on geographical distribution of plants considered from a physiological standpoint, is beyond doubt one of the most illuminating botanical works ever published. No one save a wide traveller, inspired with a deep love for, and close sympathy with, Nature could have written this masterpiece. It was the crowning piece of his life, for Schimper was

stricken down in the midst of a new work on island floras.

In conclusion we may say that Schimper revolutionised our ideas as to the fundamental constitution of the unit of plant life, widened and deepened our knowledge of the physiology of green assimilating cells, and, himself in every field in which he worked an earnest advocate, and even inventor, of strict methods of research, he, in particular, took a foremost place in raising up a true science of oecology. Through the passing of Schimper the world of science is darker by the extinction of a light which, if it did not glow with steady incandescence, yet quivered and scintillated with genius.

PERCY GROOM.

NOTES.

INTRODUCTORY addresses were delivered on Tuesday at several of the London and provincial medical schools, to open the new session. Dr. P. W. Latham, speaking at St. George's Hospital, pointed out that organic chemistry will in time tell exactly what is the composition and constitution of toxins, albumoses, antitoxins, &c., which have proved of service to medicine, and how they may be artificially synthesised in the laboratory. The vegetable alkaloids quinine, morphine and atropine, have been isolated within the last century; and the syntheses of citric acid and indigo have been effected from their elements. The isolation of the animal alkaloids may be more difficult, but it will be accomplished—some have already been obtained, others will follow; the isolation of the antitoxins will be the next chemical triumph, and then will come the synthetical production of these life-saving substances. At University College, Prof. R. Russell begged his hearers to cultivate the spirit of scientific inquiry. Every scientific investigation, if properly conducted, might be expected to disclose some new fact, and this was the only way in which true progress could be made. It was to men of science that every real fresh advance in medicine was due. The so-called practical man could do little more than apply and utilise the discoveries of the investigator. A belief prevalent among some people, that a man could not be both scientific and practical, and that the cultivation of the one spirit must of necessity be at the expense of the other, he regarded as a great fallacy. Medicine and surgery could only be expected to be advanced by a proper commingling of the scientific and the practical, so that scientific principles might find practical application in the elucidation and treatment of disease. At the London School of Medicine for Women, Dr. F. W. Andrewes also referred to the intimate relation between scientific studies and medical practice. He remarked, for instance, that the methods by which pathology is studied are precisely those used in other pure sciences—observation and experiment—and it is this science which is placing medicine and surgery on a scientific basis. It is obvious that a sound knowledge of disease is an indispensable preliminary to its reasonable treatment. At the Royal Veterinary College, Prof. Crookshank discussed the subject of the relation between human and bovine tuberculosis. Dr. A. P. Luff, at the Pharmaceutical Society, commented upon the too general use of powerful drugs in compressed forms, and of proprietary preparations, in the treatment of disease. Addresses were also given by Dr. W. Hill at St. Mary's Hospital, and Dr. T. H. Kellock at Middlesex Hospital.

THE forty-sixth annual exhibition of the Royal Photographic Society was opened to the public on Monday at the New Gallery, Regent Street, and although the greater part of the available space is occupied by exhibits of the artistic and professional kinds, there is an important section devoted to scientific and

technical examples. Among a considerable number of natural history subjects there is a notable series, that has been awarded the Society's medal, by Mr. Douglas English. He shows six frames, each containing three or four different photographs of the brown rat, the common mouse, the wood mouse, the field vole, the bank vole and the water vole respectively. The photographs are not of a haphazard kind, for in spite of the difficulties of the subjects Mr. English has succeeded in giving typical front and side views of each species. A series of waves and ripple marks in water, sand, snow and clouds, by Dr. Vaughan Cornish, and another of typical cloud forms, by Captain D. Wilson-Barker, are good examples of the kind of work that may be done in this direction. M. Henri Becquerel has contributed several interesting examples of the effects of the mysterious rays that emanate from uranium and radium, including their deviation in a magnetic field and the separation of the different kinds of rays. Recent spectrum work of various kinds is also shown. A series of radiographs by Dr. Hall-Edwards is of especial interest as they were made at the Imperial Yeomanry hospitals at Deelfontein and Pretoria a few months ago. They show bullets in different parts of the body, including the chest, and the effects of soft-nosed and expansive bullets. In the Exhibition there will be found a fine collection of examples of various methods of photomechanical work. A panorama of the great working hall of the German Electrical Co. is a remarkable photogravure nearly five feet in length, by Messrs. Meisenbach, Riffarth and Co., but the most notable exhibits in this section are the colour prints. Three-colour prints by the method of superposed films, superposed carbon prints, and the ordinary three-colour typographic work, photogravure in colours and colour collotypes, may be seen at their best. Those who appreciate the curious in this direction may examine gum bichromate prints in three colours, and colour effects produced by exposing gelatino-chloride paper through green leaves. Among the new apparatus the European Blair Camera Co. have contributed their new film cartridge, in which the numbers and dividing marks are simple perforations through white paper, showing the black beneath, and therefore cannot have any effect on the sensitive surface.

THE Cunard steamer *Lucania*, which arrived at Liverpool on Saturday morning, reported that, on September 25, she had been in communication at sea by wireless telegraphy, with the same company's outward bound steamer *Campania*, which left Liverpool on September 21. The ships were 36 miles apart when complimentary messages were exchanged, and were not visible to each other at any time.

THE annual "cryptogamic meeting" of the Essex Field Club will be held on Saturday, October 12, at High Beach, Epping Forest. Dr. M. C. Cooke, Mr. Masee, Prof. Marshall Ward, F.R.S., and other botanists have consented to act as referees. Prof. Marshall Ward will give an address on "The Scientific Study of Fungi." Botanists and others wishing to attend should communicate with the hon. secretary, Mr. W. Cole, Buckhurst Hill, Essex.

WE learn from the *Times* that a statue of Pasteur was unveiled on Sunday at Arbois, where he spent his childhood and where he latterly spent his few holidays. Pasteur's son and his son-in-law, M. Vallery Radot, were present, and almost the whole population of the little town assembled round the statue. M. Decrais, Minister of the Colonies, in a glowing eulogium on Pasteur, stated that in the hope of earning for France the honour of preventing the ravages of yellow fever, Drs. Marchoux and Simon, nominated by the Pasteur Institute, and M. Salimbeni, an eminent Italian, were about to be sent to Brazil to study the malady. M. Liard, of the Institute, also spoke on Pasteur's achievements and character.

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PROF. G. SIMS WOODHEAD contributes to the *Monthly Review* an article upon the prevention and cure of tuberculosis, with special reference to the conclusions stated by Prof. Koch in his address to the recent British Congress on Tuberculosis.

THE last two numbers received of Engler's *Botanische Jahrbücher* (vol. xxx. Heft 2 and vol. xxxi. Heft 1 and 2) contain several important systematic papers—a monograph of the *Diseæ* (a section of *Orchidæ*), by R. Schlechter, and a monograph of *Mahonia*, by F. Fedde—a report on the botanical results of the Lake Nyassa and Kinga Mountain Expedition, by Prof. Engler; and a very interesting short paper by E. Ule on ant-gardens in the Amazon region. Several species of ants appear to collect the seeds of the "ant-epiphytes" and carefully bury them in humus, covering up and protecting the young plants when they germinate, and thus producing veritable gardens often of considerable size. Quite a number of these epiphytes—three *Araceæ*, five *Bromeliaceæ*, five *Gesneriaceæ*, one *Moraceæ*, two *Piperaceæ*, one *Cactaceæ*—were found by Ule in these gardens and nowhere else.

THE Society for the Protection of Birds is this year offering two prizes, of 10*l.* and 5*l.* respectively, for papers on the best means of establishing a "Bird and Arbour Day" in England. In many of the schools of the United States bird days and arbour days have become a very popular institution, and have proved most successful in interesting teachers and children in birds and bird protection; and the Society's offer will, it is hoped, elicit practical hints as to the way in which the scheme may be introduced and worked in English schools. Papers are to be sent in not later than November 30, 1901, and all particulars may be obtained of the Hon. Secretary, Society for the Protection of Birds, 3, Hanover-square, London, W.

DR. T. E. THORPE'S report upon the work of the Government Laboratory has recently become available. From the large amount of work described in the report, we select a few points for mention. It appears that since the Act was passed limiting the amount of moisture in tobacco to 30 per cent., manufacturers have been using an excessive quantity of oil in roll and cake tobacco. An Act was therefore passed last year limiting the proportion of oil to 4 per cent., and a process for the estimation of the amount of oil has been devised. Liquorice, glycerine, and salicylic acid are other substances found in adulterated samples of tobacco. Two samples of British-grown tobacco were received at the Government Laboratory from two small lots of tobacco which had been grown in England by persons who had not received the permission from the Board of Inland Revenue to grow tobacco—such permission is necessary even for experimental cultivation. A sample of pemmican was examined for the Committee of the National Antarctic Expedition. It was supposed to be quite free from moisture and to contain 60 per cent. of ox lard with a highly nutritive base, but on examination it was found to contain 8 per cent. of moisture and 38 per cent. of starch, whilst the total amount of fat present was only 19.6 per cent. Many other instances of adulterated goods and variation of quality are given by Dr. Thorpe. Thus, in ten samples of india-rubber the proportion of vulcanised rubber was found to vary between 5.7 and 44 per cent. Analyses made for the War Office showed that several samples of so-called butter were margarine; baking powders have been found to contain 67 and 75 per cent. of starch; cocoa paste has yielded 41 per cent. of water and only 23 per cent. of real cocoa; a sample of mustard contained 60 per cent. of added flour; strawberry jam 10 per cent. of other fruit, and many other jams and marmalade large proportions of glucose; oat-meal, flour and arrowroot were found of inferior quality, and so on. Among the drugs examined was a sample of effervescing

phosphate of soda, which on analysis was found to contain arsenic equal to 4.62 grains of arsenious oxide per pound. The samples examined for the India Office were of the usual wide range. Gold-leaf is required to contain not less than 97 per cent. of pure gold, but in one instance a sample contained 5 per cent. of silver and only 91 per cent. of gold; type-metal is to consist of 65 parts of lead, 30 parts of antimony and 5 parts of tin, and yet in eight samples received together, the lead varied between 65 and 82 per cent., the antimony between 15 and 29 and the tin between 0.6 and 5.5 per cent.; antimony is required to contain less than 3 per cent. of impurities, but of five samples two contained 5.76 and 4.15 per cent. of impurity respectively. The functions of the Government Laboratory are evidently exercised over a wide field, and national interests are promoted by such analytical work as is carried on under Dr. Thorpe's direction.

IN *Symons's Meteorological Magazine* for September, Dr. H. R. Mill, who accompanied the Antarctic exploring vessel *Discovery* as far as Madeira, gives some details of the arrangements for taking observations. During the voyage out meteorological observations will be made every two hours, and these will be kept up subsequently to supplement those made at the land station. For the ordinary routine observations a form of Stevenson's Screen is erected in a position where a current of air will be blowing, when the vessel is under way. Rainfall observations are to be attempted by means of a marine rain-gauge and evaporator on Dr. Black's pattern. The position presented much difficulty; the method finally adopted was to place the gauge on the weather side, shifting it whenever the ship changes her tack, while the evaporator occupies a position on the lee side. The whole of the meteorological work on board is under the charge of the first officer, Lieutenant C. Royds. It is intended to make special observations in the Antarctic regions on the conditions of the upper atmosphere, and for this purpose a captive balloon and kites are provided. A Dines' pressure anemometer will be erected at the land station. The oceanographical observations to be made during the voyage will be under the charge of Lieutenant E. H. Shackleton, while Lieutenant M. Barne will take charge of the deep-sea soundings after leaving Melbourne.

A REMARKABLY simple astatic galvanometer is described by M. G. Lippmann in the *Journal de Physique* for August. It consists essentially of a fixed coil, or in practice two coils, and a needle suspended in such a way as to be capable of displacement parallel to itself. The needle is placed with its axis coinciding with that of the coils, and pointing in the plane of the magnetic meridian. It is suspended by a thread from one arm of a torsion balance. Now the earth's magnetism has no tendency to produce displacements of pure translation in a magnetised needle, and since it is these displacements which alone are observed, it follows that the earth exerts no force in opposition to that produced by the current in the coil; the apparatus is therefore perfectly astatic.

AN interesting phenomenon recently described in connection with the theory of sound forms the subject of a paper by Mr. Bergen Davis in the *Physical Review* for June. The property in question is that if a small cylinder, closed at one end and open at the other, is placed in a stationary sound-wave, it will not only arrange itself perpendicular to the wave, but will also move across it in the direction of its axis. By arranging four such cylinders on a rotating mill, like the cups on an anemometer, and placing this mill with its axis of rotation perpendicular to the wave front, it was found that on sounding the organ pipe producing the waves, the cylinders rotated with a high velocity, except when placed at the nodes. The phenomenon is readily

explained as a consequence of Bernoulli's well-known relation between the pressure, density and velocity of a fluid.

MAXWELL'S theory, which attributes electric and magnetic phenomena to tensions and pressures in the medium that forms the seat of electric and magnetic energy, has long been a subject for criticism. In the *Nuovo Cimento*, 5, ii., Signor Luigi Giuganino now advances certain considerations arising from a mathematical investigation of the tensions in the interior of a fluid polarised magnetically or dielectrically. The author finds, among other results, that if the polarised body is compressible and behaves like a fluid body, and only carries induced charges, it is impossible to find a system of elastic stresses equivalent to the given polarisation. If, however, the polarised body is considered to be an imperfect fluid, either there exist an infinite number of systems of tensions and pressures equivalent to the polarisation, or no such system exists. The expression for these tensions and pressures does not, however, reduce to Maxwell's and Helmholtz's formula. Signor Giuganino further advances the view that the elastic constant of the fluid when polarised assumes different values along and perpendicular to the lines of force, and that herein lies the explanation of Kerr's phenomenon.

IN the last *Bollettino* of the Italian Seismological Society, Prof. Grablovitz describes a simple and inexpensive form of recording tide-gauge, the total cost of which he estimates at less than 7*l.* 10*s.* The movements recorded are those of a spiral spring the length of which changes with the varying amount of immersion of a cylinder suspended from it.

IN continuation of his previous reports, Mr. S. Arcidiacono describes the principal eruptive phenomena which occurred in Sicily and the adjacent islands during the year 1900 (*Boll. della Soc. Sismol. Ital.* vol. vii. 1900, pp. 82-91). After the great explosion in the central crater of Etna on July 19, 1899, and the short eruptive period which succeeded it, that volcano remained in a state of almost uninterrupted calm. Stromboli continued in its usual condition of slight activity, varied by a few stronger outbursts, especially in the early part of October. The solfataric phase of Vulcano and the absolute calm of the Salsa di Paterno underwent no change throughout the year.

A CATALOGUE of the marine invertebrata of Eastern Canada, by Dr. J. F. Whiteaves, has also been published by the Geological Survey of Canada (1901). It consists of a systematic list of all the species described from the Bay of Fundy, the Atlantic coast of Nova Scotia, the Gulf and mouth of the River St. Lawrence, as far north as the Strait of Belle Isle. The localities at which some of the species are found fossil in the Pleistocene deposits are also briefly indicated.

Dr. G. A. F. MOLENGRAAFF, who was formerly State Geologist to the South African Republic, has written an excellent account of the geology of the Transvaal Colony, which has been published by the Geological Society of France (*Bulletin*, 4e serie, vol. i. 1901). It is accompanied by a colour-printed map, and many pictorial views and sections.

A SIXTH edition of Mr. Whitaker's useful "Guide to the Geology of London" has just been issued by the Geological Survey. The first edition was published in 1875, and in the present edition the work has grown to the extent of thirty pages, partly owing to an increased number of illustrations, including fossils, flint-implements, and sections of strata. The work has been brought thoroughly up to date, and the price remains one shilling.

WE have received from the Geological Survey of Canada the Annual Report for the year 1898 (Ottawa, 1901). This includes the Summary Report, and also a report on the mineral statistics,

previously noticed in *NATURE* (June 15 and September 20, 1899). There are also reports on the shores of Lake Winnipeg, on those of Hudson Strait, and on Quebec province. In these the fossils of the Cambro-Silurian or Ordovician rocks of Manitoba and of Quebec receive especial attention, and there are full descriptions of the glacial phenomena. There is a good view showing the character of the surface of the Archæan rocks in Keewatin, and many other photographic illustrations of scenery and geological structure.

MR. J. J. WILKINSON has forwarded us a copy of a pamphlet giving an account of the very large and remarkable pharynx of the fly-larvæ commonly known as rat-tailed maggots, which are sometimes seen so abundantly in water. The pamphlet, which is illustrated with two plates, is published by Messrs. R. Clay and Sons, Ltd.

THE *American Naturalist* for September contains only two original communications—the one a continuation of Prof. W. M. Wheeler's account of the compound and mixed nests of American ants, and the other of Prof. H. S. Jennings' synopsis of North American invertebrates. The particular description of social ant-life treated of in Prof. Wheeler's article is that commonly known as slavery, and technically as "dulosis." Instead of slaves, it is suggested that a better title for the subservient ants would be helpmates, or auxiliaries, for the members of the two species found in the same nests behave towards each other as if they were brothers and sisters, and share the task of constructing the habitation. Unlike that which obtains in other kinds of ant-association, the so-called slaves always belong to the same subfamily group as their masters.

IN their Report for 1900 the trustees of the South African Museum remark that "the public events of the past year have, naturally, affected the Museum in more ways than one. Both the number of contributions to the collection and the number of visitors to inspect them have fallen off to a considerable extent. This is the first break in a continuous increase prolonged over a lengthened period." In spite of these discouraging circumstances, it is nevertheless hoped that substantial progress has been made both in regard to the development of the Museum and the extension of our knowledge of the South African fauna. During the year in question were issued Mr. W. L. Sclater's two volumes on the mammals of South Africa and the late Dr. Stark's volume on the birds, all of which have been noticed in our columns. The Director announces that, with the aid of the MS. left by Dr. Stark, he has completed the second volume on the birds, while the third is in hand. The Museum has been enriched by specimens of several mammals from Mr. Rhodes's park at Groote Schuur.

AN interesting and well-illustrated account of the growth and present condition of the Millport Marine Biological Station, or, as it is now called, the Marine Biological Association of the West of Scotland, appears in *Good Words* for September. As many of our readers are aware, this admirable institution, which is so largely indebted for its progress to Sir John Murray and had very small beginnings, was started to commemorate the life-work of David Robertson, the "naturalist of Cumbrae." And it is satisfactory to learn that the "Robertson Museum," occupying the upper part of the main building of the station, attracts during the season a large number of visitors, many of whom display much interest in the living creatures from the Firth of Clyde exhibited in special tanks. From its humble beginnings in the well-remembered "Ark"—a barge given by Sir J. Murray—the author traces the gradual progress of the station, which has been recently enriched by the gift, from an anonymous donor, of a deep-sea dredging steamer, and likewise by a five-year endowment from the same generous hand. As an

instance of the manner in which commerce is benefited by undertakings of this nature, Mr. Sinclair tells us how the discovery of large deep-water shrimps in the Scotch lochs led to their detection in the still deeper fjords of Norway, with the result that the Norwegians now do a flourishing trade in these deep-sea crustaceans.

IN a very interesting memoir which has recently appeared in the *Proceedings* of the American Academy of Arts and Sciences (vol. xxxvi. No. 20, March 1901) Messrs. T. W. Richards and E. H. Archibald give a preliminary account of the series of investigations they are carrying on in the chemical laboratory of Harvard College on the growth of crystals. Ever since the discovery of the microscope, the gradual growth of crystals in a solution has proved a fascinating study, but the sudden way in which the embryo crystals flash into existence and the insensible manner in which they enlarge their dimensions appear to defy the acutest observer. Vogelsang introduced the method of retarding the action of the crystallising forces by adding viscous materials to the solvent, and his study of globulites and other forms of embryo crystals has been the starting-point of many important physical investigations by O. Meyer, Ostwald and others. The two American investigators, with the aid of a grant from the Rumford Fund, are now applying the method of instantaneous photomicrography to the study of growing crystals. In their first memoir they discuss the methods of procedure and give illustrations of some of their results, which appear to be full of promise.

ANTHROPOLOGISTS and folklorists would find it worth their while regularly to look over the pages of *Globus*, as in that well-edited journal there are constantly interesting and often illustrated articles and notes which are of permanent value. For example, in No. 23, Bd. lxxix., there is an essay by Julius von Negerlein on souls as birds, and a well-illustrated article on West African masks and the ceremonies with which they are associated, by Dr. Karutz. R. Palleske gives an illustrated account of a find at Ingelstad, in Sweden, of a horse's skull in which is embedded a very fine stone axe head of a form characteristic of the later half of the (Neolithic) Swedish Stone age; as it is highly probable that the horse did not exist in its wild state in Sweden after the Quaternary period, the conclusion is arrived at that in the late Neolithic age the horse was domesticated in Sweden. The original account of this interesting find was published by Gunnar Andersson, in *Ymer*, 1901, heft i. In No. 1, Bd. lxxx., F. von Luschan gives an illustrated description of a new kind of masks from New Britain, Dr. A. Krämer discusses phallic and other sacred stones from the Pacific and Dr. L. Rüttimeyer figures two "stone idols" from West Africa. In No. 7 Dr. R. Lasch publishes a learned study on the fate of the souls of women who die in child-bed. All over the world there are beliefs of the disastrous results of this calamity; thus in the Malay Peninsula "the Pontianak" (or Mati-anak, as W. W. Skeat also calls it in his "Malay Magic," which book the author appears to have overlooked) "is supposed to be the ghost of a woman dying in child-bed, and is commonly seen in the form of a huge bird uttering a discordant cry. It haunts forests and burial grounds, appears to men at midnight, and it is said to emasculate them."

THE *Transactions* of the American Microscopical Society for 1900 (issued May, 1901), contains papers on a great variety of subjects, ranging from the surface impurities affecting water-supply and "limnology" (the study of lakes), to the classification of desmids and microscopic crustaceans, the parasites of the human ear and of lacustrine fish, and the description of a new cave salamander from Missouri. The latter, it may be observed, is another member of the already large American genus *Spelerpes*. A special feature of the volume is the first

report of the newly constituted Limnological Commission, whose aim is to institute an exhaustive biological and physical investigation of the American lakes, on the plan already carried out with such success in Switzerland.

THE third instalment of Messrs. W. and G. S. West's "Alga-Flora of Yorkshire," reprinted from the *Transactions of the Yorkshire Naturalists' Union*, completes their list of the Conjugatae (Desmidiaceae) of the county, and enumerates the Siphonaceae, Protococcoideae, and Cyanophyceae (Myxophyceae), with the commencement of the diatoms (Bacillariaceae).

WE have received from Mr. J. H. Maiden, Government Botanist and Director of Botanic Garden, Sydney, copies of about thirty papers contributed by him during the years 1896-1901 to the *Agricultural Gazette of New South Wales*, and reprinted by the Department of Agriculture for the Colony, all relating to some point of interest or importance to farmers, gardeners, or fruit growers in the Colony.

IF sufficient support can be obtained, it is proposed to establish a new monthly journal, under the title *British Botanical Journal*, to afford a ready means of communication and discussion among British botanists. The contents will consist of articles and reviews, short paragraphs on important and striking current botanical matters, correspondence, short notices of books, original papers and notes, &c. Communications should be addressed to Mr. A. G. Tansley, University College, London, W.C., who will be the first editor.

Bulletin No. 28 of the U. S. Department of Agriculture, Division of Vegetable Physiology and Pathology, consists of an elaborate account, occupying more than 150 pages, of the cultural characters of the yellow flagellate bacteria *Pseudomonas Hyacinthi*, *P. campestris*, *P. Phaseoli*, and *P. Stewarti*, parasitic respectively on the hyacinth, on cruciferous plants, on leguminous plants, and on grasses, especially on maize. The favourable and unfavourable conditions for the growth of the parasites are treated of in great detail.

THE first part of a "Handbuch der vergleichenden und experimentellen Entwicklungslehre der Wirbeltiere," edited by Dr. Oscar Hertwig, has been received from the house of Gustav Fischer, Jena. The work promises to contain an exhaustive treatment of comparative and experimental embryology, and will be completed in about twenty parts at four-and-a-half marks each.

MM. GAUTHIER-VILLARS have commenced the publication of a complete "Cours d'Électricité," by Prof. H. Pellat. The work will be issued in three parts, the first of which, dealing with electrostatics, Ohm's law and thermoelectricity, has been received. The second volume will be concerned with electrodynamics, magnetism and induction, and the third with electrolysis, electro-capillarity and related questions. The part already received contains the course of work in electricity at the Sorbonne in 1898-1899; the second part will contain that carried on in 1899-1900, and the third will correspond to the course to be followed next year.

A NEW edition of "The Evolution of Sex," by Profs. Patrick Geddes and J. Arthur Thomson, reviewed in NATURE in 1890 (vol. xli. p. 51), has been published by Mr. Walter Scott. "In this revised edition," say the authors, "though many alterations and additions have been made, the original character of the work has been retained, and that notwithstanding the difficulty that the authors have in the past ten years been diverging biologically—the one towards a Neo-Lamarckian position, the other towards a Neo-Darwinian one. Yet they remain agreed

on the main endeavour of the book, which is to set forth the fundamental unity underlying the Protean phenomena of sex and reproduction."

A NEW scientific periodical, the *Allgemeine Naturforscher-Zeitung*, edited by Dr. C. Wenck, commenced its career on October 2, and will appear twice weekly. The aim of the Editor is to publish scientific papers very shortly after they have been presented at meetings or congresses, and to make the journal reflect the chief characteristics of current scientific work. The first number contains two papers—one on anabiosis and the other on electrons—read at the recent Congress of Naturalists and Physicians at Hamburg, and a number of abstracts and reviews. In general character, the new periodical does not differ much from the old-established *Naturwissenschaftliche Wochenschrift*, which has just commenced a new series under the editorship of Prof. Potonié and Dr. F. Körber, and is now published by Mr. Gustav Fischer.

THE additions to the Zoological Society's Gardens during the past week include a Ring-tailed Lemur (*Lemur catta*) from Madagascar, presented by Mr. Chas. Rawsthorne; two Jays (*Garrulus glandarius*), British, presented by Mr. W. Radcliffe Saunders; three Common Snakes (*Tropidonotus natrix*), British; a Viperine Snake (*Tropidonotus viperinus*), European, presented by the Rev. H. A. Soames; a King Crab (*Limulus polyphemus*) from the North Atlantic Ocean, presented by Mr. Walker; two Arabian Baboons (*Cynocephalus hamadryas*, ♂ & ♀) from Arabia, a Nilgiri Thar (*Hemitragus hylocrius*, ♂) from Southern India, four Getulian Ground Squirrels (*Xerus getulus*) from Morocco, four Great Wallaroos (*Macropus robustus*) from South Australia, an African Civet Cat (*Viverra civetta*) from South Africa, two Malayan Wrinkled Hornbills (*Rhytidoceros undulatus*) from Malacca, six Gigantic Salamanders (*Megalobatrachus maximus*) from Japan, four American Box Tortoises (*Cistudo carolina*) from North America, six Ceylonese Terrapins (*Nicoria trijuga*), nine Starred Tortoises (*Testudo elegans*) from India, a Lesueur's Water Lizard (*Physignathus lesueuri*) from Queensland, a Bearded Lizard (*Amphibolurus barbatus*) from Australia, deposited; a Rufous-necked Wallaby (*Macropus ruficollis*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

DIAMETER OF VENUS.—In the *Astronomical Journal* (vol. xxii. pp. 13-15), Mr. D. A. Drew gives the results of a series of measures of the diameter of Venus, made with the 24-inch refractor of the Lowell Observatory at Flagstaff, Arizona, in 1898. For the majority of the determinations a power of 165 was employed, together with an ocular diaphragm half a millimetre in diameter and an amber-coloured glass screen.

The tabulation and discussion of the reduced diameters indicates that there appears to be a peculiar variation in the planet's diameter, decidedly periodic, which may be due partly to the variable irradiation with the different phases and brilliancy of the body at different times.

SPECTRUM AND APPEARANCE OF NOVA PERSEI.—Herr E. von Gothard announces in *Astronomische Nachrichten* (Bd. 156, No. 3738) that he has photographed the spectrum of the Nova with a 10½-inch reflector and objective prism, the result showing many of the characteristics of the peculiar structure seen in the spectra of planetary nebulae. Bright lines are present at $\lambda\lambda$ 5007, 4861 (H β), 4341 (H γ), 4101 (H δ), 3970 (H ϵ), 3867, and a new line about λ 342. The brightest line in the whole spectrum is that at λ 3867, which is very prominent in planetary nebulae.

He also alludes to the possibility of the aureole shown surrounding the star on photographs obtained with refracting telescopes being produced by the non-achromatic correction of these glasses for the extreme ultra-violet rays, which are so strongly developed in the Nova spectrum as to produce the chief part of the photographic action. This view of the question is also mentioned by Prof. Max Wolf in No. 3736; in